Rocky Flats Environmental Technology Site

PRO-487-MPCR

METALS AND PCB CHARACTERIZATION PROCEDURE

REVISION 0

09/01/99

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Safeguards, Security, Site Operations & Integration	
Safety Systems & Engineering	

USE CATEGORY 3

This procedure is performed as written and need not be in hand for the performance of the described tasks. **The procedure SHALL be available at a known location for reference.**

USQD Program Review **SES-RFP-99.1532-BDB**
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This procedure is a new procedure

Periodic review frequency 3 years from effective date

PADC-1999-02682

LIST OF EFFECTIVE PAGES

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The following DCF's are active for this document
None

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1 0 PURPOSE

This procedure describes the collection of samples for characterization of metals and PCB contamination, and is specifically designed to provide waste management and occupational hazard assessment information in support of decommissioning activities In some cases, the results may be used to support a final status survey

2 0 SCOPE

This procedure applies to unique sampling needs for characterization of metals and PCBs in support of decommissioning activities at the Rocky Flats Environmental Technology Site (RFETS) The Data Quality Objectives (DQOs) and sampling plans given in the Reconnaissance Level Characterization Plan (RLCP) **SHALL** determine the number, location, and type of samples collected

The *Bulk and Liquids Characterization Procedure* (PRO-488-BLCR) should be consulted for sampling operations such as use of a hole saw bit, spade bit, or coring device to take a bulk sample, use of a COLIWASA or drum thief to take a liquid sample, and grab sampling of bulk and liquid material

3.0 DEFINITIONS

PCBs (polychlorinated biphenyls) are mixtures of synthetic organic chemicals with the same basic chemical structure and similar physical properties ranging from oily liquids to waxy solids Due to their non-flammability, chemical stability, high boiling point and electrical insulating properties, PCBs were used in hundreds of industrial and commercial applications including electrical, heat transfer, and hydraulic equipment, as plasticizers in paints, plastics and rubber products, in pigments, dyes and carbonless copy paper and many other applications Production of PCBs in the United States ceased in 1977

TCLP (toxicity characteristic leaching procedure) analysis is a laboratory test described in EPA SW-846 TCLP requires a minimum of 100 grams of sample for analysis

Non-Porous Surface A smooth, unpainted solid surface that limits penetration of liquid containing PCBs beyond the immediate surface Examples are smooth uncorroded metal, natural gas pipe with a thin porous coating originally applied to inhibit corrosion, smooth glass, smooth glazed ceramics, impermeable polished building stone such as marble or granite, and high density plastics, such as polycarbonates and melamines, that do not absorb organic solvents (40 CFR 761 3)

4 0 LIMITATIONS AND PRECAUTIONS

- This procedure document is written to address unique sampling needs for metals and PCB characterization of RFETS buildings in preparation for deactivation and decommissioning (D&D) activites Sampling needs that are not **specifically** addressed here **SHALL** be addressed individually by a separate procedure appropriate for the specific application
- This procedure document is subject to modification at the first instance of promulgation of revised regulations involving PCBs and/or RCRA metals
- No activity (e g , dry sweeping, scabbling, fixed equipment stripout, etc) that may cause

media containing metals or PCBs to become airborne **SHALL** be authorized without the proper controls and personal protective equipment Controls may include engineering controls, decontamination of materials, use of fixatives, and use of containments

- Requirements and controls provided in the RFETS Occupational Safety and Industrial Hygiene Progam Manual **SHALL** be followed

5 0 PREREQUISITE ACTIONS

1 **Due to the degree of complexity of PCB regulation and the frequency with which these regulations change, all PCB sampling activities SHALL be reviewed and approved prior to initiation of sampling activities by a subject matter expert (SME) who is qualified to interpret the Site PCB Management Plan (97-4360-0002) and 40 CFR 761 regulations**

2 **Develop the Work Authorization Package** Consult the IWCP Manual (MAN-071-IWCP) for guidance This step is the responsibility of the project field supervisor The requirements may include, but are not limited to

a) **Complete an Activity Screening Form,**

b) **Conduct a Job Hazard Analysis,**

c) **Ensure that an Activity Hazard Analysis and a Health and Safety Plan are completed,**

d) **Determine where pre- and/or post-sampling radiological surveys must be performed,**

e) **Determine required controls and requirements for PPE use (*including safety shoes, safety glasses, and bump caps or hard hats*) for each sampling activity to be performed**

IMPORTANT ***Additional actions may be necessary per IWCP other than those listed above. The Work Authorization Package must be approved and signed by all required personnel prior to initiation of sampling activities.***

3. **Perform a building walkdown** This is the appropriate time to begin to carry out the following

a) **Begin the Job Hazard Analysis,**

b) **Assess locations of samples** based upon the sampling map provided by the field supervisor, or if precise sampling locations are not yet determined, designate them in cooperation with the field manager,

c) **Determine whether any impediments to easy access exist,** such as radiation contamination areas, equipment location and storage, personal protective equipment requirements, Radiological Work Permit requirements, etc , and decide how to proceed (i e , choose alternate sample location, obtain required permits, etc),

d) Ensure that the sampler, industrial hygiene representative, radiological engineer, field manager, and other appropriate personnel understand and agree to sample locations and manner in which the samples are to be collected

4 **Submit a completed Sample Analysis Request Form (SARF) to Analytical Services Division (ASD)** ASD will then assign RIN numbers to the samples and provide uniquely numbered, pre-printed sample labels

5. **Note the RIN number for the set of samples** in the PCB Sample Log (see Appendix A) or Metals Sample Log (see Appendix B) as appropriate

6 **Obtain either an Analytical Services Division Chain of Custody form (RSFORM-16-03-2) or a Safety and Hygiene Chain of Custody Record and Analysis Request form (RFP F 3791 32, 7/95), depending upon which organization will collect the sample** Complete the form, noting unique sample number, type of analysis (i e , TCLP metal, total metal, PCB), media, and any notes about the sample location or collection

7 **Coordinate with building management for *written* Plan of the Day (POD) authorization**

8 **Obtain all required permits and complete all required forms** This includes, but is not limited to

- **Job Hazard Assessment (JHA) and Activity Hazard Assessment (AHA)** (available from IWCP coordinator),
- **Activity Screening Form** (available from IWCP coordinator),
- **Radiological Work Permit (RWP),** if required (requested from Radiological Operations),
- **Property Release Evaluation (PRE) Form** (RSFORMS-09 01-01), completed in accordance with 3-PRO-141-RSP-09 01, *Unrestricted Release of Property, Material, Equipment, and Waste*

Consult with Industrial Hygiene, Radiological Operations, Fire Protection Engineering, and Criticality Engineering, as appropriate, to determine any other permits or notifications required

9 **Arrange for a Radiological Control Technician** to carry our pre- and post-sampling surveys and to assess radiological contamination of samples before they are removed from the sampling area if these steps are deemed necessary by Radiological Operations or Radiological Engineering In this case, the RCT **SHALL** carry out the survey and record results per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*

10 **Inspect all equipment for safe operation before use**

11. **Review unique work instructions** for the individual job, including sample locations, amount (mass or volume) of sample to be taken, number and type of rinsate samples to be taken, and other job-specific instructions prior to initiation of sampling

12 **Prior to initiation of sampling activities, a pre-evolutionary briefing SHALL be conducted** by the project manager and field supervisor with all samplers, RCTs, IH personnel, and other individuals involved in the sampling operation present At this point,

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job-specific sampling instructions, the IWCP, and all other necessary information for safe and effective completion of the job will be discussed

13 **Determine the training requirements for job performance and area access** Refer to the Training Users' Manual (PADC-1991-00793) for this information Ensure that personnel are properly trained prior to performing work

6 0 MATERIALS AND EQUIPMENT

NOTE Where rinsate samples are taken, plastic containers should be avoided if phthalates are a contaminant of concern

6.1 "Floor Wash" Sampling

- Steam vacuum
- Portable steam pressure washer and liquid collector
- Certified distilled, deionized water, ASTM Type I or II
- Pre-cleaned glass sample jars of appropriate size
- Metals Sample Log
- Chain of custody form
- Tamper-proof seals
- Preprinted, uniquely numbered labels for each sampling location
- Sharpie or other marking pen
- Disposable gloves
- Map of area
- List of predetermined sampling locations
- Tape measure or laser measuring device
- Camera, photo identification card, and camera pass, if photos are required

6.2 PCB Sampling on Non-Porous Surfaces

- 3 in x 3 in squares of cotton gauze
- Iso-octane or hexane (**CAUTION! FLAMMABLE!** Consult with Fire Protection Engineering for controls)
- Pre-cleaned glass sample jars of appropriate size
- Template that sequesters a 100 cm^2 pattern (disposable templates are suggested to avoid cross-contamination concerns)
- PCB Sample Log
- Chain of custody form
- Tamper-proof seals
- Preprinted, uniquely numbered labels for each sampling location
- Sharpie or other marking pen
- Disposable gloves
- Gloves composed of milled nitrile (11 mil or thicker) or a comparable material
- Map of area
- List of predetermined sampling locations
- Tape measure or laser measuring device
- Camera, photo identification card, and camera pass, if photos are required

6.3 Paint Chip Sampling

- Paint scraper
- Heat gun (optional, **NOT FOR USE IF SAMPLING PCB'S**, consult with IH&S for controls)
- Zip Lock™ - type plastic bags
- Precleaned sample jars of appropriate size
- Rinsate sample containers and deionized water
- Metals Sample Log or PCB Sample Log
- Chain-of-custody form
- Tamper proof seals
- Sharpie or other marking pen
- Disposable gloves
- Map of area
- Mass balance or scale
- List of predetermined sampling locations
- Tape measure or laser measuring device
- Breathing zone air sampling equipment (consult with IH&S for assistance)
- Camera, photo identification card, and camera pass, if photos are required

7 0 INSTRUCTIONS

7.1 Floor Wash Sampling

IMPORTANT Obtain approval of the Criticality Safety Officer prior to initiating any floor wash sampling activities.

7 1 1 Sampling

Sampler

1 Ensure that all required materials listed in Section 6 1, including a list of predetermined sampling areas, are in hand before proceeding to the survey area, as well as any required PPE

2 Visually verify sample location against written descriptions on attached map Confirm that the appropriate pre-numbered label exists for each sample location

Radiological Control Technician (RCT)

3 Obtain pre-media sampling 100 cm^2 total measurements at each sampling location within the sample area and record results per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*

4 Obtain pre-media sampling 100 cm^2 removable swipes at each sampling location within the sample area and record results per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*

5 If the surface contains removable radioactivity, then the surface **SHALL** be decontaminated prior to sampling

IMPORTANT If any radiological measurement exceeds contamination limits stated in the

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Radiological Work Permit or in Table 2-2 in the Radiological Controls Manual, **STOP WORK and consult with Radiological Operations and with Radiological Engineering before proceeding**

NOTE Steps 3 through 5 may be waived at the discretion of Radiological Engineering when process knowledge is documented in the radiological record All requirements of the PRE must be satisfied

6 Move a steam vacuum, portable steam pressure washer and liquid collector, or other appropriate tool, over the sampling area in slow, overlapping, deliberate passes The wash water should be certified distilled, deionized water (ASTM Type I or II)

7 Collect the wash fluid and measure the volume using a graduated cylinder

8 Record the wash volume

9 Carefully transfer 15 ml of wash fluid into a sample jar for Radscreen, and then transfer the desired volume of wash fluid for analysis into a sample bottle

10 Tightly cap the sample bottles

11 Apply the sample label with the proper RIN number and the Custody Seals to the sample bottle

12 Double bag the sample bottle

13 Record the sampling details on the field worksheet, the field logbook, and the Chain of Custody form

14 Place the sample bottles in a protected location

15 If preservation at 4°C is required, immediately place the sample bottles into a cooler containing blue ice

Radiological Control Technician (RCT)

16 Assay the outside of the sample vials and record results per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements* If the results of the assay indicate that radiological contamination exists, consult with Radiological Operations before proceeding

17 Perform assays of sampling equipment before removal from a potentially contaminated area and record results per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*

NOTE If any radiological measurement exceeds contamination limits stated in the Radiological Work Permit or in Table 2-2 in the Radiological Controls Manual, **STOP WORK and consult with Radiological Operations and with Radiological Engineering before proceeding**

NOTE Steps 16 and 17 may be waived at the discretion of Radiological Engineering when process knowledge is documented in the radiological record All requirements of the PRE must be satisfied

Sampler

18 Photograph the sample identification area with photo identification card ***(This step is optional*** *If photographs are required* ***a camera pass must first be obtained*** *from the Photography Department, 966-2658 Alternatively, an individual already possessing a camera pass may be contacted to take the photo)*

19 Provide the project representative with the Metals Sampling Log (see Appendix A), associated maps, photos, and other relevant documentation for the samples collected

Radiological Operations Supervisor

20 Review the survey package in accordance with 3-PRO-165-RSP-07 02, *Contamination Monitoring Requirements*, and 3-PRO-141-RSP-09 01, *Unrestricted Release of Property, Material, Equipment, and Waste* Provide a copy of the approved survey package to the field supervisor or project manager for sample disposition

21 Update postings as necessary

Sampler

22 Provide the field supervisor or project manager with all log books, associated maps, photos, and other documentation relevant to the samples collected

Field Supervisor

23 Record the following information in the Project Field Logbook on a daily basis

- Date and time of sampling
- Name of person recording the entries
- Field team members (including subcontractors and visitors)
- Activity description (including building number, sampling locations)
- PPE Level
- Instruments including serial numbers and calibration data (unless recorded in separate log)
- Weather conditions (if applicable)
- Any deviations or special considerations

Reference the sample collection forms that are specified within the procedure (i e Sample Log, etc)

24 Review Sample Log, Chain of Custody, and other documentation for completeness and accuracy Record any deviations or special considerations in the Project Field Log

7.1 2 Packaging

Sampler

1 Place a tamper proof custody seal over the lid and the jar such that the seal will be broken if the jar is opened Sign and date the tamper-proof seal

2 Complete the specific packaging requirements specified in 1-T93-Traffic-110, *On-Site Transportation of Hazardous and Radioactive Materials Manual*, and 1-T97-Traffic-112, *Sample Packaging and Transfer*

3 Complete the chain of custody form

NOTE If samples are to be transported to the laboratory by someone other than the sampler, then the sampler must relinquish the samples by signing the chain of custody form and the person receiving the samples must sign for the samples **Samples must be under chain of custody at all times.**

7 1 3 Transfer and Shipment

Sampler

1 Transport the samples in the manner specified in 1-T93-Traffic-110, *On-Site Transportation of Hazardous and Radioactive Materials Manual*, and 1-T97-Traffic-112, *Sample Packaging and Transfer* to Site Building T891R and transfer custody of the samples to the Commodore Advanced Sciences (CAS) representative

2 Have the CAS representative sign the Safety and Hygiene Chain of Custody Record Retain the Safety and Hygiene Chain of Custody Record

NOTE If samples are to be transported by someone other than the sampler, then the sampler must relinquish the samples by signing the chain of custody form and the person receiving the samples must sign for the samples **Samples must be under chain of custody at all times.**

3 Give copies of the completed Radiological Survey Form and Property Release Evaluation form to the CAS representative

4 Advise the CAS representative of the analytical laboratory to which the samples are to be shipped

5 Transport samples for radscreen to Site Building T886D and formally transfer custody of the radscreen samples to the Thermo NuTech representative **Samples must be under chain of custody at all times.**

7 1 4 Investigation-derived Waste

1 All investigation-derived waste will be disposed of or laundered as per the requirements of the area under survey, in accordance with 4-D99-WO-1100, Rev 1, *Solid Radioactive Wastes Packaging*, 1-PRO-573-SWOPD, *Sanitary Waste Offsite Disposal Procedure*, as well as any applicable RWP's or other requirements

7.2 Sampling Non-Porous Surfaces: *PCB Only*

This section describes sampling of non-porous surfaces for PCBs **PCB sampling activities SHALL be reviewed and approved prior to initiation of sampling activities by a subject matter expert (SME) who is qualified to interpret the Site PCB Management Plan and 40 CFR 761 regulations**

40 CFR 761 Subpart P, "Sampling Non-Porous Surfaces for Measurement-Based Use, Reuse, and On-Site or Off-Site Disposal under § 761 61(a)(6) and Determination under § 761 79(b)(3)" is *appropriate and relevant* for PCB sampling of non-porous surfaces.

7 2 1 Sampling

Sampler

1 Ensure that all required materials listed in Section 6 2, including a list of predetermined sampling areas, are in hand before proceeding to the survey area, as well as any required PPE

NOTE *Only gloves composed of milled nitrile (11 mil or thicker) or a comparable material that will not be dissolved by hexane or isooctane may be used for sampling The solvents iso-octane and hexane will dissolve latex gloves*

2 Visually verify sample location against written descriptions on attached map Confirm that the appropriate pre-numbered label exists for each sample location

Radiological Control Technician (RCT)

3 Obtain pre-media sampling 100 cm^2 total measurements at each sampling location within the sample area and record results per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*

IMPORTANT If any radiological measurement exceeds contamination limits stated in the Radiological Work Permit or in Table 2-2 in the Radiological Controls Manual, **STOP WORK and consult with Radiological Operations and with Radiological Engineering before proceeding**

NOTE Step 3 may be waived at the discretion of Radiological Engineering when process knowledge is documented in the radiological record All requirements of the PRE must be followed

Sampler

4 Use the 100 cm^2 template to define the sampling area at each location, but **do not allow the template to touch the surface, since this will contaminate the template and result in cross-contamination of samples** Alternatively, the decontaminate the template between sampling locations, or use disposable templates

5 Grasp a cotton gauze pad of approximately 3 in x 3 in with a gloved hand ***Do not use forceps***

6 Moisten the gauze with hexane or iso-octane and then thoroughly wipe the entire 100 cm^2 sampling area ***twice*** **It is important that the filter be swiped over the *entire area* bounded by the template, and that the wipe be carried out in a consistent manner from sample to sample.**

CAUTION: Collect the sample in a manner that your gloved hands will not come in contact with the surface being sampled If at any time a glove comes in contact with the surface being sampled, dispose of it in accordance with section **7 2.4** below, and don a fresh glove

7 Place the gauze pad in an appropriately sized (approximately 8 oz) wide mouth sample jar that is pre-labelled with the proper ASD sample label (including RIN number) and seal tightly

8 Place security tape over the lid and jar such that the jar cannot be re-opened without breaking the seal

9 **IMMEDIATELY** record the sample number and a detailed description of the sample in the PCB Sample Log Ensure that the description is provided in sufficient detail that another individual could easily locate the sampling site at a later time If required, photograph the sample identification area with photo identification card *(If photographs are required, **a camera pass must first be obtained** from the Photography Department, 966-2658 Alternatively, an individual already possessing a camera pass may be contacted to take the photo)*

10 If a field blank has been requested in the work package, obtain that sample last

11 Transfer chain of custody of samples to the RCT for contamination survey if samples are to leave your direct control

Radiological Control Technician (RCT)

12 Obtain post-media sampling 100 cm^2 total measurements at each sampling location within the sample area and record results per 3-PRO-165-RSP 07, 02, *Contamination Monitoring Requirements*

13 Carry out surveys of sampling equipment as appropriate before removal from a potentially contaminated area and record results per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*

14 Carry out surveys of outside of all sample vials and record results per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*

IMPORTANT If any radiological measurement exceeds contamination limits stated in the Radiological Work Permit or in Table 2-2 in the Radiological Controls Manual, **STOP WORK and consult with Radiological Operations and with Radiological Engineering before proceeding**

NOTE Steps 12 through 14 may be waived at the discretion of Radiological Engineering when process knowledge is documented in the radiological record All requirements of the PRE must be satisfied

Sampler

15 Write the sample number for each sample on the chain of custody form

NOTE. If samples are to be transported by someone other than the sampler, then the sampler must relinquish the samples by signing the chain of custody form and the person receiving the samples must sign for the samples **Samples must be under chain of custody at all times**

Radiological Operations Supervisor

16 Review the survey package in accordance with 3-PRO-165-RSP-07 02, *Contamination Monitoring Requirements*, and 3-PRO-141-RSP-09 01, *Unrestricted Release of Property, Material, Equipment, and Waste* Provide a copy of the approved survey package to the field supervisor or project manager for sample disposition

17 Update postings as necessary

Sampler

18 Provide the field supervisor or project manager with all log books, associated maps, photos, and other documentation relevant to the samples collected

Field Supervisor

19 Record the following information in the Project Field Logbook on a daily basis

- Date and time of sampling
- Name of person recording the entries
- Field team members (including subcontractors and visitors)
- Activity description (including building number, sampling locations)
- PPE Level
- Instruments including serial numbers and calibration data (unless recorded in separate log)
- Weather conditions (if applicable)
- Any deviations or special considerations

Reference the sample collection forms that are specified within the procedure (i e Sample Log, etc)

20 Review Sample Log, Chain of Custody, and other documentation for completeness and accuracy Record any deviations or special considerations in the Project Field Log

7 2 2 Packaging

Sampler

1 Place a tamper proof custody seal over the lid and the jar such that the seal will be broken if the jar is opened Sign and date the tamper-proof seal

IMPORTANT Samples contain a flammable solvent They must be kept away from any source of ignition

2 Complete the specific packaging requirements specified in 1-T93-Traffic-110, *On-Site Transportation of Hazardous and Radioactive Materials Manual*, and 1-T97-Traffic-112, *Sample Packaging and Transfer*

3 Complete the chain of custody form

NOTE If samples are to be transported to the laboratory by someone other than the sampler, then the sampler must relinquish the samples by signing the chain of custody form and the person receiving the samples must sign for the samples **Samples must be under chain of custody at all times.**

7 2 3 Transfer and Shipment

Sampler

1 Transport the samples in the manner specified in 1-T93-Traffic-110, *On-Site Transportation of Hazardous and Radioactive Materials Manual*, and 1-T97-Traffic-112, *Sample Packaging and Transfer* to Site Building T891R and transfer custody of the samples to the Commodore Advanced Sciences (CAS) representative

IMPORTANT Samples contain a flammable solvent They must be kept away from any source of ignition.

2 Have the CAS representative sign the Safety and Hygiene Chain of Custody Record Retain the Safety and Hygiene Chain of Custody Record

NOTE If samples are to be transported by someone other than the sampler, then the sampler must relinquish the samples by signing the chain of custody form and the person receiving the samples must sign for the samples **Samples must be under chain of custody at all times**

3 Give copies of the completed Radiological Survey Form and Property Release Evaluation form to the CAS representative

4 Advise the CAS representative of the analytical laboratory to which the samples are to be shipped

5 Transport samples for radscreen to Site Building T886D and formally transfer custody of the radscreen samples to the Thermo NuTech representative **Samples must be under chain of custody at all times.**

7 2 4 Investigation-derived Waste

1 All investigation-derived waste will be disposed of or laundered as per the requirements of the area under survey, in accordance with 4-D99-WO-1100, Rev 1, *Solid Radioactive Wastes Packaging*, 1-PRO-573-SWOPD, *Sanitary Waste Offsite Disposal Procedure*, as well as any applicable RWP's or other requirements

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7.3 Paint Chip Sampling

NOTE The RFETS Environmental Leadership Team has determined in *Environmental Compliance Guidance No 27, Lead Based Paint and Lead Based Paint Debris Disposal* that analysis of paints for lead or other metals is unnecessary for purposes of characterization of the waste stream except under certain circumstances (i e scabbling of the paint to form a separate waste stream or characterization of paint from currently identified HCA's) Consult these and any follow up documents for further guidance Similar guidance with regard to PCBs is provided in *Environmental Compliance Guidance No 25, Management of Polychlorinated Biphenyls (PCBs) in Paint and Other Bulk Product Waste During Facility Disposition* **Consult these documents *before* proceeding with any paint sampling operation**

This sampling procedure is provided for IH use in characterizing occupational hazards to workers, and for circumstances in which it is appropriate for waste characterization according to the above mentioned documents

PCB sampling activities SHALL be reviewed and approved prior to initiation of sampling activities by a subject matter expert (SME) who is qualified to interpret the Site PCB Management Plan and 40 CFR 761 regulations

7 3 1 Sampling

Sampler

1 Ensure that all required materials listed in Section 6 3, including a list of predetermined sampling areas, are in hand before proceeding to the survey area, as well as any required PPE

2 Visually verify sample location against written descriptions on attached map Confirm that the appropriate pre-numbered label exists for each sample location

Radiological Control Technician (RCT)

3 Obtain pre-media sampling 100 cm^2 total measurements at each sampling location within the sample area and record results per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*

4 Obtain pre-media sampling 100 cm^2 removable swipes at each sampling location within the sample area and record results per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*

NOTE Steps 3 and 4 may be waived at the discretion of Radiological Engineering when process knowledge is documented in the radiological record All requirements of the PRE must be satisfied

5 If the surface contains removable radioactivity, then the surface **SHALL** be decontaminated prior to paint chip sampling

IMPORTANT If any radiological measurement exceeds contamination limits stated in the Radiological Work Permit or in Table 2-2 in the Radiological Controls Manual, **STOP WORK**

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and consult with Radiological Operations and with Radiological Engineering before proceeding

Sampler

6 If sampling is to occur on a vertical suface, tape a sealable "Ziplock"-type plastic bag approximately 3 inches below the area to be scraped To avoid possible sources of cross contamination, be sure that the tape bonding material does not come in contact with the inside of the plastic bag For horizontal surfaces, an appropriate scoop, tongs, or other tool may be used to collect the sample into the jar

7 Scrape the area using a putty knife or razor knife as appropriate If available, a needle gun or a heat gun may be used, but an IH representative **SHALL** first be consulted to ensure proper controls

NOTE A heat gun may **NOT** be used if sampling for PCBs

8 Collect the amount of paint chips specified in the specific work instruction, plus an additional 2 grams for radscreen

9 Transfer at least 2 grams of paint chips to the clean, properly labeled, appropriately sized jar for radscreen

10 Transfer the remaining sample to the clean, properly labeled, appropriately sized jar for analysis

11 **IMMEDIATELY** *record the sample number and a detailed description of the sample in the* Metals or PCB Sample Log Ensure that the description is provided in sufficient detail that another individual could easily locate the sampling site at a later time If required, photograph the sample identification area with photo identification card *(If photographs are required, **a camera pass must first be obtained** from the Photography Department, 966-2658 Alternatively, an individual already possessing a camera pass may be contacted to take the photo)*

12 Decontaminate sampling equipment before moving to the next sample For one event, collect one deionized water rinsate sample after decontamination of equipment but before collecting the next sample Collect both 4 liter and a 40 ml rinsates from the same event into separate, appropriately sized and labeled containers

13 Transfer chain of custody of samples to the RCT for contamination survey if samples are to leave your direct control

Radiological Control Technician (RCT)

14 Obtain post-media sampling 100 cm^2 total measurements at each sampling location within the sample area and record results per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*

15 Obtain post-media sampling 100 cm^2 removable swipes at each sampling location within the sample area and record results per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*

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16 Conduct surveys of sampling equipment before removal from a potentially area and record results per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*

17 Formally accept custody of the samples if necessary

18 Carry out surveys of outside of all sample vials and record results per 3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*

NOTE Steps 14 through 16, and Step 18, may be waived at the discretion of Radiological Engineering when process knowledge is documented in the radiological record All requirements of the PRE must be satisfied

Sampler

19 Write the sample number for each sample on the chain of custody form Place the sample number label on the chain of custody papers

NOTE If samples are to be transported by someone other than the sampler, then the sampler must relinquish the samples by signing the chain of custody form and the person receiving the samples must sign for the samples **Samples must be under chain of custody at all times**

Radiological Operations Supervisor

20 Review the survey package in accordance with 3-PRO-165-RSP-07 02, *Contamination Monitoring Requirements*, and 3-PRO-141-RSP-09 01, *Unrestricted Release of Property, Material, Equipment, and Waste* Provide a copy of the approved survey package to the field supervisor or project manager for sample disposition

21 Update postings as necessary

Sampler

22 Provide the RLC project representative with the Metals or PCB Sample Log, associated maps, photos, and other documentation relevant to the samples collected

Field Supervisor

23 Record the following information in the Project Field Logbook on a daily basis

- Date and time of sampling
- Name of person recording the entries
- Field team members (including subcontractors and visitors)
- Activity description (including building number, sampling locations)
- PPE Level
- Instruments including serial numbers and calibration data (unless recorded in separate log)
- Weather conditions (if applicable)
- Any deviations or special considerations

Reference the sample collection forms that are specified within the procedure (i e Sample Log, etc)

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24 Review Sample Log, Chain of Custody, and other documentation for completeness and accuracy Record any deviations or special considerations in the Project Field Log

7 3 2 Packaging

Sampler

1 Place a tamper proof custody seal over the lid and the jar such that the seal will be broken if the jar is opened Sign and date the tamper-proof seal

2 Complete the specific packaging requirements specified in 1-T93-Traffic-110, *On-Site Transportation of Hazardous and Radioactive Materials Manual*, and 1-T97-Traffic-112, *Sample Packaging and Transfer*

3 Complete the chain of custody form

NOTE If samples are to be transported to the laboratory by someone other than the sampler, then the sampler must relinquish the samples by signing the chain of custody form and the person receiving the samples must sign for the samples **Samples must be under chain of custody at all times**

7 3 3 Transfer and Shipment

Sampler

1 Transport the samples in the manner specified in 1-T93-Traffic-110, *On-Site Transportation of Hazardous and Radioactive Materials Manual*, and 1-T97-Traffic-112, *Sample Packaging and Transfer* to Site Building T891R and transfer custody of the samples to the Commodore Advanced Sciences (CAS) representative

2 Have the CAS representative sign the Safety and Hygiene Chain of Custody Record Retain the Safety and Hygiene Chain of Custody Record

NOTE If samples are to be transported by someone other than the sampler, then the sampler must relinquish the samples by signing the chain of custody form and the person receiving the samples must sign for the samples **Samples must be under chain of custody at all times.**

3 Give copies of the completed Radiological Survey Form and Property Release Evaluation form to the CAS representative

4 Advise the CAS representative of the analytical laboratory to which the samples are to be shipped

5 Transport samples for radscreen to Site Building T886D and formally transfer custody of the radscreen samples to the Thermo NuTech representative **Samples must be under chain of custody at all times**

7 3.4 Investigation-derived Waste

All investigation-derived waste will be disposed of or laundered as per the requirements of the area under survey, in accordance with 4-D99-WO-1100, Rev 1, *Solid Radioactive Wastes*

Packaging, 1-PRO-573-SWOPD, *Sanitary Waste Offsite Disposal Procedure*, as well as any applicable RWP's or other requirements

8 0 ANALYTICAL REQUIREMENTS

Samples **SHALL** be analyzed persuant to general ASD requirements by EPA SW-846 methods TCLP analysis **SHALL** be conducted as in EPA SW-846 Method 1311, "Toxicity Characteristic Leaching Procedure " PCB analysis **SHALL** be conducted by EPA Method 8082 or 8270, or an appropriate method listed in Table 21 "Standard Procedures of Analysis for PCBs," in EPA 560 5-85-026, "Verification of PCB Spill Cleanup by Sampling and Analysis "

(NEED TO APPLY THIS TO WASH WATER AND TO PAINT CHIPS)

The maximum levels of contamination for the toxicity characteristic (which addresses arsenic, barium cadmium lead mercury, selenium, and silver) are specified in 40 CFR 261 24 If media exceed RCRA contamination thresholds as listed in 40 CFR 261 24, 268 40, or 268 48, they will be managed according to RCRA requirements For each RCRA waste code assigned to the waste form under characterization either process knowledge or analytical measurements **SHALL** be used to demonstrate compliance with the land disposal restriction (LDR) requirements of 40 CFR 268 as implemented by the receiving State

Hold time for PCB samples **SHALL** be 14 days or less, and no more than 40 days **SHALL** pass between sample collection and laboratory analysis (i e , sample injection)

For metals listed under 40 CFR 261 24, the regulatory levels are

Contaminant	Regulatory Level (mg/L TCLP)
Arsenic	5 0
Barium	100 0
Cadmium	1 0
Chromium	5 0
Lead	5 0
Mercury	0 2
Selenium	1 0
Silver	5 0

Therefore, the PQLs for metals **SHALL** be at least 50% of the above listed regulatory levels

For PCB waste, consult the Reconnaissance Level Characterization Plan for decision limits PQLs for PCBs **SHALL** be at least 50% of the applicable decision limit

9 0 REPORTING

The number of measurements and the applicable statistical distribution will be presented in tabular form, with additional graphical representation if applicable, to the Project Manager

10 0 DISPOSITION OF RECORDS

The following records are generated as a result of the implementation of this procedure

- Metals Sample Log
- PCB Sample Log
- Radiological Survey Forms
- Property Release Evaluation form (PRE)
- Sample Analysis Request Form (SARF)
- Chain of Custody forms
- Project Field Logbook

The sample logs and the Project Field Logbook will each be assigned a unique document control number and treated as a controlled document

The collected Metals Sample Log Sheets (Appendix A) and PCB Sample Log Sheets (Appendix B) will comprise the Metals Sample Log and the PCB Sample Log, respectively The Metals Sample Log, the PCB Sample Log, and the Project Field Logbook **SHALL** each be assigned unique document control numbers and be treated as controlled documents Specifically, the Metals Sample Log, the PCB Sample Log, and the Project Field Logbook **SHALL** each be considered In-process Quality Assurance (QA) Documents until the corresponding project is completed, at which point they **SHALL** each be handled and controlled as QA Records (Non-WIPP/LL/LLM), in accordance with 1-V41-RM-001, Records Management Guidance for Records Sources, and 1-F78-ER-ARP 001, CERCLA Administrative Record Program The PRE and the Radiological Survey Forms **SHALL** be handled and controlled as a QA Record (Non-WIPP/LL/LLM), and the SARF **SHALL** be handled and controlled as a Non-QA Record (Non-WIPP/LL/LLM)

Sampling data will be entered into the RFETS Soil and Water Database (SWD) utilizing the FieldCap menu, following the procedure in Sections 2, 3, and 4 of "SWD As-Built Detailed Design," RF/RMRS-98-203, Rev 2 1, Draft A, pp 4-13

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11 0 REQUIREMENTS

All work **SHALL** be performed in accordance with

- MAN-071-IWCP, *RFETS IWCP Manual*
- PADC-96-00042, *RFETS Quality Assurance Manual*
- MAN-066-COOP, *RFETS Conduct of Operations Manual*
- Occupational Safety and Industrial Hygiene Program Manual (OS&IHPM)
- Radiological Safety Practices Manual (RSP 1 0)
- RFETS Radiological Controls Manual
- 94-ALARA-PLAN-0003, *RFETS ALARA Program Plan*

All workers **SHALL** be trained in accordance with

- PADC-1991-00793, *RFETS Training Users' Manual*

All records **SHALL** be managed in accordance with
- 1-V41-RM-001, *Records Management Guidance for Records Sources*
- 1-F78-ER-ARP 001, *CERCLA Administrative Record Program (40 CFR 800-825)*
- Kaiser-Hill Team Quality Assurance Program

All sample transportation, transfer, and packaging **SHALL** be in accordance with

- 1-T93-Traffic-110, *On-Site Transportation of Hazardous and Radioactive Materials Manual*
- 1-T97-Traffic-112, *Sample Packaging and Transfer*

All PCB sampling and analysis **SHALL** be done in accordance with

- 1-10000-EWQA-1 5, *RFETS TSCA PCB Management Plan*

Documentation that each of these requirements has been met **SHALL** be included in the Project File

Minor deviations from this procedure that do not impact the regulations noted above are subject to the approval of the project manager and will be recorded on the sample log without modification to the procedure The ARAR process will select those requirements which are either applicable or appropriate and relevant, or alternatively, administrative versus substantive

12.0 REFERENCES

1-MAN-001-SDRM, *Site Documents Requirements Manual*

3-PRO-165-RSP 07 02, *Contamination Monitoring Requirements*

DMM-133-98, *RFETS Occupational Safety and Industrial Hygiene Progam Manual*

1-V41-RM-001, *Records Management Guidance for Records Sources*

1-F78-ER-ARP 001, *CERCLA Administrative Record Program*

EPA 560 5-85-026, *Verification of PCB Spill Cleanup by Sampling and Analysis*

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EPA SW-846 Method 1311, *Toxicity Characteristic Leaching Procedure*

1-T93-Traffic-110, *On-Site Transportation of Hazardous and Radioactive Materials Manual*

1-T97-Traffic-112, *Sample Packaging and Transfer*

Conduct of Operations Manual, MAN-066-COOP

PCB Sample Log

SAMPLER _____
EMPLOYEE #_____
DATE _____

Sample Sequence Number	Bldg and Room Number	(1) Media (2) Dust (3) Sludge (4) Paint (5) Non-porous	Description (color, type of media wood, concrete, etc , type of surface steel, tile, etc , condition of area wet, presence of debris, etc , difficulties in sample collection)	Mass of sample collected (gm)

Metals Sample Log

SAMPLER _____
EMPLOYEE #_____
DATE _____

Sample Sequence Number	Bldg and Room Number	(1) Media (2) Dust (3) Sludge (4) Paint	Description (color, type of media wood, concrete, etc , type of surface steel, tile, etc , condition of area wet, presence of debris, etc , difficulties in sample collection)	Mass of sample collected (gm)

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SAMPLE

RELEASE EVALUATION FORM
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Release Evaluation No **REV ONE EXTENDED. YES** **EXPIRES**
Charge No _____

PART I **SENDER/CUSTODIAN**
ACKNOWLEDGMENT

Description of Property/Waste/Sample To Be Released/Transferred

_____

Current Location

_____

_____

_____

Destination

_____

_____

New Recipient/Custodian

_____

History/Process Knowledge

Has the specified material ever been in an RMMA/RBA/CA or contacted DOE controlled radioactive materials?

1) By signing below, I certify information provided in Part I of this release evaluation to be true and accurate
2) By signing below, I agree to comply with the specific requirements noted in Part II of this release evaluation

Sender/Custodian _ Emp No Date Ext

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PART II **RADIOLOGICAL ENGINEERING**

SPECIFIC REQUIREMENTS AND/OR COMMENTS

Evaluated _____ Emp No _____
Radiological Engineer

Date _____ Ext _____

APPROVAL FOR TRANSFER/SHIPMENT

Approved _____ Emp No _____ Date _____ Ext
Radiological Engineer

The samples specified in Part 1 of this release evaluation are being provided with authorization for transport as non-radioactive materials in accordance with Department of Transportation (49 CFR) regulations This authorization for shipment does not constitute an unrestricted release

SAMPLE RELEASE 990101-00881-036 REV ONE